

Please amend claims 1, 2, 4, 5, 6 and 8 as per attached with this Response and Amendment. Attachment A is a marked-up copy of the claim amendments, while Attachment B is a clean copy of the amended claims.

REMARKS

Upon entry of this amendment, claims 1-2, 4-6 and 8 are pending in the application. Claim 1 is an independent claim drawn to method for producing power from a heat source, while claim 5 is an independent claim drawn to an apparatus for producing power from a heat source. Claims 1 and 5 have been amended to incorporate the limitations of claims 3 and 7, respectively, and claims 3 and 7 have been canceled without prejudice or disclaimer to the subject matter contained therein. Since the claim amendments are based on the claims as originally filed, Applicants submit that the amendments to the claims do not add new matter within the meaning of 35 U.S.C. §132 since the amendments to claims 1 and 5 incorporate the limitations of claims 3 and 7, respectively. The remaining claim amendments are to correct the dependency of the claims.

As an initial matter, Applicants question the Examiner's discussion in paragraph 1 of the Office Action of a request for

continued examination. The present application was filed as a continuation in part application on July 12, 2001. The present Office Action is the first Office Action in this application and no request for continued examination has been filed. Thus, it appears that the Examiner's comments in paragraph 1 of the Office Action are in error.

However, Claims 1-8 stand rejected as being indefinite. Claims 1, 2, 5 and 6 stand rejected as being anticipated by Bronicki; claims 1-8 stand rejected as being anticipated by Yogev et al.; and claims 3, 4, 7 and 8 stand rejected as being obvious over Bronicki in view of the Dow Chemical article.

1. Rejection of Claims 3-5 Under
35 U.S.C. §112, Second Paragraph

Claims 1-8 stand rejected under 35 U.S.C. 112, second paragraph as being indefinite for the reasons set forth in the Office Action.

RESPONSE

Applicants respectfully traverse this rejection and request reconsideration and withdrawal thereof.

Applicants respectfully submit that the amendments to claim 1

overcome this rejection, rendering the rejection moot. Applicants have amended claim 1 to incorporate the limitations of claim 3, and have corrected the antecedent basis problem within the claim. Thus, Applicants have overcome this rejection.

Accordingly, Applicant respectfully submits that the amendments to claims 1 and 5 render the claims definite.

2. Rejection of Claims 1, 2, 5 and 6 Under 35 U.S.C. 102(b)

Claims 1, 2, 5 and 6 stand rejected under 35 U.S.C. 102(b) as being anticipated by Bronicki (U.S. Patent No. 4,428,190) for the reasons set forth in the Office Action.

RESPONSE

Applicant respectfully traverses this rejection and respectfully requests reconsideration and withdrawal thereof.

To establish an anticipation rejection, every claimed element must be found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. V. Union Oil Co. of California*, 814 F2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987); See also, MPEP § 2131. Applicant respectfully submits that the Examiner has not met this burden.

As amended, independent claim 1 is drawn to a method for

producing power from a heat source comprising the steps of: heating a synthetic, alkylated aromatic heat transfer fluid with heat from said heat source and producing a vaporized synthetic, alkylated aromatic heat transfer fluid in an intermediate fluid heater/vaporizer; vaporizing an organic liquid working fluid with heat from the vaporized synthetic, alkylated aromatic heat transfer fluid in an organic fluid vaporizer to form a vaporized organic working fluid and a synthetic, alkylated aromatic heat transfer fluid condensate; expanding said vaporized organic working fluid in an organic vapor turbine for generating power and producing an expanded vaporized organic working fluid; condensing said expanded organic vaporized working fluid to produce an organic fluid condensate; and supplying the organic fluid condensate to the organic fluid vaporizer Claim 2 depends from claim 1 and add further limitations thereto.

Likewise, independent claim 5 is drawn to an apparatus for producing power from a heat source comprising: a synthetic, alkylated aromatic heat transfer fluid heater/vaporizer that heats and vaporizes the synthetic, alkylated aromatic heat transfer fluid with heat from said heat source and produces a vaporized synthetic, alkylated aromatic heat transfer fluid; an organic fluid vaporizer that vaporizes an organic liquid working fluid with heat from the

vaporized synthetic, alkylated aromatic heat transfer fluid to form a vaporized organic working fluid and a synthetic, alkylated aromatic heat transfer fluid condensate; an organic vapor turbine that expands said vaporized organic working fluid and generates power and produces expanded vaporized organic working fluid; an organic fluid condenser that condenses said expanded organic vaporized working fluid to produce an organic working fluid condensate so that the organic working fluid condensate is supplied to the organic working fluid vaporizer. Claim 6 depends from claim 5 and adds further limitations thereto.

Thus, in order for Bronicki to anticipate claims 1 and 5 (and the claims that depend therefrom), Bronicki must disclose all of the limitations set forth above. Applicant respectfully submits that Bronicki fails to do so, and therefore does not anticipate the claims.

Applicant respectfully submits that Bronicki discloses a power plant utilizing multi-stage turbines. In addition, when the load on the power plant decreases below rated value, the boiler operation is maintained, but low-grade exhaust steam exiting the high pressure turbine is diverted to **a heat store** large enough to accumulate heat. The **heat store** then supplies heat to the waste heat converter. Bronicki discloses that the heat store may be a

large volume of water. In any case, Applicants respectfully submit that this is different wholly different from the method and apparatus of the present claims.

In particular, Applicants respectfully submit that Bronicki fails to teach the vaporization of an organic working fluid with heat from the vaporized synthetic, alkylated aromatic heat transfer fluid in an organic fluid vaporizer. In Bronicki, the organic working is vaporized by heat **from the heat store** and not directly from the vaporized heat transfer fluid. Further, Bronicki is silent with respect to the use of a synthetic, alkylated aromatic heat transfer fluid being used as the intermediate fluid. Thus, Bronicki fails to teach **all of the limitations** of the present claims.

Accordingly, Applicant respectfully submits that Bronicki does not disclose all of the limitations of claims 1 and 5 (and therefore, of the dependent claims, which contains all of the limitations of claims 1 and 5, respectively), and does not anticipate the claims. Applicant respectfully requests reconsideration and withdrawal of the rejection.

3. Rejection of Claims 1-8 Under 35 U.S.C. 102(b)

Claims 1-8 stand rejected under 35 U.S.C. 102(b) as being

anticipated by Yogev et al. (U.S. Patent No. 4,760,705) for the reasons set forth in the Office Action.

RESPONSE

Applicant respectfully traverses this rejection and respectfully requests reconsideration and withdrawal thereof.

To establish an anticipation rejection, every claimed element must be found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. V. Union Oil Co. of California*, 814 F2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987); See also, MPEP § 2131. Applicant respectfully submits that the Examiner has not met this burden.

As amended, independent claim 1 is drawn to a method for producing power from a heat source comprising the steps of: heating a synthetic, alkylated aromatic heat transfer fluid with heat from said heat source and producing a vaporized synthetic, alkylated aromatic heat transfer fluid in an intermediate fluid heater/vaporizer; vaporizing an organic liquid working fluid with heat from the vaporized synthetic, alkylated aromatic heat transfer fluid in an organic fluid vaporizer to form a vaporized organic working fluid and a synthetic, alkylated aromatic heat transfer fluid condensate; expanding said vaporized organic working fluid in

an organic vapor turbine for generating power and producing an expanded vaporized organic working fluid; condensing said expanded organic vaporized working fluid to produce an organic fluid condensate; and supplying the organic fluid condensate to the organic fluid vaporizer Claim 2 depends from claim 1 and add further limitations thereto.

Likewise, independent claim 5 is drawn to an apparatus for producing power from a heat source comprising: a synthetic, alkylated aromatic heat transfer fluid heater/vaporizer that heats and vaporizes the synthetic, alkylated aromatic heat transfer fluid with heat from said heat source and produces a vaporized synthetic, alkylated aromatic heat transfer fluid; an organic fluid vaporizer that vaporizes an organic liquid working fluid with heat from the vaporized synthetic, alkylated aromatic heat transfer fluid to form a vaporized organic working fluid and a synthetic, alkylated aromatic heat transfer fluid condensate; an organic vapor turbine that expands said vaporized organic working fluid and generates power and produces expanded vaporized organic working fluid; an organic fluid condenser that condenses said expanded organic vaporized working fluid to produce an organic working fluid condensate so that the organic working fluid condensate is supplied to the organic working fluid vaporizer. Claim 6 depends from claim

5 and adds further limitations thereto.

Thus, in order for Yogev et al. to anticipate claims 1 and 5 (and the claims that depend therefrom), Yogev et al. must disclose all of the limitations set forth above. Applicant respectfully submits that Yogev et al. fails to do so, and therefore does not anticipate the claims.

Yogev et al. discloses a Rankine cycle power plant with an improved organic working fluid. The working fluid is selected from the group consisting of bicyclic hydrocarbons, substituted bicyclic aromatic hydrocarbons, heterocyclic bicyclic aromatic hydrocarbons, substituted heterocyclic bicyclic aromatic hydrocarbons, bicyclic compounds where one ring is aromatic and the other condensed ring is non-aromatic, and their mixtures. However, as is detailed above, the present claims are directed to **synthetic, alkylated aromatic hydrocarbons**, and not the bicyclic aromatic hydrocarbons nor the heterocyclic aromatic hydrocarbons as listed in Yogev et al.

Therefore, Applicants respectfully submit that Yogev et al. fails to teach the **synthetic, alkylated aromatic hydrocarbons** of the present claims. Since Yogev et al. fail to teach each and every limitation of the claimed subject matter, Applicants respectfully submit that Yogev et al. fails to anticipate the

claims. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejections.

4. Rejection of Claims 3, 4, 7 and 8 Under 35 U.S.C. 103(a)

Claims 3, 4, 7 and 8 stand rejected under 35 U.S.C. 103(a) as being obvious over Bronicki (U.S. Patent No. 4,428,190) in view of the Dow Chemical Company 1983 article "Achieving Low pressure Cogeneration with DOWTHERM Heat Transfer Fluids" for the reasons set forth in the Office Action.

RESPONSE

Applicant respectfully traverses this rejection and requests reconsideration and withdrawal thereof.

The references of record, Bronicki and the Dow Chemical Company article, do not teach or suggest Applicants' inventive subject matter as a whole, as recited in the amended claims. Further, there is no teaching or suggestion in this reference which would lead the ordinary skilled artisan to modify the reference to derive the subject matter as defined in the amended claims.

The U.S. Supreme Court in *Graham v. John Deere Co.*, 148 U.S.P.Q. 459 (1966) held that non-obviousness was determined under § 103 by (1) determining the scope and content of the prior art;

(2) ascertaining the differences between the prior art and the claims at issue; (3) resolving the level of ordinary skill in the art; and, (4) inquiring as to any objective evidence of nonobviousness.

A. The present inventive subject matter

Claims 3 and 7 have been canceled, thus rendering their rejection moot.

Claim 4 depends from independent claim 1 and claim 8 depends from independent claim 5. Thus, the dependent claims necessarily contain all of the limitations of the independent claims, and if the independent claims are not obvious over the prior art combination, then neither are the dependent claims. Independent claims 1 and 5 are detailed above with respect to the anticipation rejections, the contents are hereby incorporated and thus will not be reprinted here.

Claim 4 adds the limitation to claim 1 that the synthetic, alkylated aromatic heat transfer fluid condensate is supplied to the synthetic, alkylated aromatic heat transfer fluid heater/vaporizer. Likewise claim 8 adds the limitation to claim 5 of a pump for supplying said synthetic, alkylated aromatic heat transfer fluid condensate to said intermediate fluid

heater/vaporizer.

B. The References

Bronicki (U.S. Patent No. 4,428,190) discloses a power plant utilizing multi-stage turbines. In addition, when the load on the power plant decreases below rated value, the boiler operation is maintained, but low-grade exhaust steam exiting the high pressure turbine is diverted to **a heat store** large enough to accumulate heat. The **heat store** then supplies heat to the waste heat converter.

The Dow Chemical Company article discloses the use of heat transfer fluids in cogeneration operations.

C. Differences between claimed invention and references

The differences between applicant's inventive subject matter and the cited references are readily apparent from their independent and distinct disclosures and claims. As is discussed above with respect to the anticipation rejection, which is hereby incorporated, Applicant respectfully submits that Bronicki discloses a power plant utilizing multi-stage turbines in which, when the load on the power plant decreases below rated value, the boiler operation is maintained, but low-grade exhaust steam exiting the high pressure turbine is diverted to **a heat store** large enough

to accumulate heat. The **heat store** then supplies heat to the waste heat converter. Bronicki discloses that the heat store may be a large volume of water. In any case, Applicants respectfully submit that this is different wholly different from the method and apparatus of the present claims.

In particular, Applicants respectfully submit that Bronicki fails to teach the vaporization of an organic working fluid with heat from the vaporized synthetic, alkylated aromatic heat transfer fluid in an organic fluid vaporizer. In Bronicki, the organic working is vaporized by heat **from the heat store** and not directly from the vaporized heat transfer fluid. Further, Bronicki is silent with respect to the use of a synthetic, alkylated aromatic heat transfer fluid being used as the intermediate fluid. Thus, Bronicki fails to teach **all of the limitations** of the present claims. For the limitation of the use of a synthetic, alkylated aromatic heat transfer fluid, the Examiner turns to the Dow Chemical Company article.

However, Applicants respectfully submit that the Dow Chemical Company article fails to supply the deficiencies of Bronicki. In particular, the Dow Chemical Company article also fails to teach the vaporization of an organic working fluid with heat from the vaporized synthetic, alkylated aromatic heat transfer fluid in an

organic fluid vaporizer. Thus, since both references fail to teach this limitation, the combination of references would also fail to teach the limitation. Accordingly, the combination of references would not suggest or teach the claimed subject matter as a whole.

Applicants respectfully submit that claims 4 and 8 are not obvious over the combination of references, and respectfully request reconsideration and withdrawal of the rejections.

CONCLUSION

In view of the foregoing, applicants respectfully request the Examiner to reconsider and withdraw the all pending rejections, and to allow all of the claims pending in this application.

If the Examiner has any questions or comments regarding this matter, he is welcomed to contact the undersigned attorney at the below-listed number and address.

Respectfully submitted,

NATH & ASSOCIATES

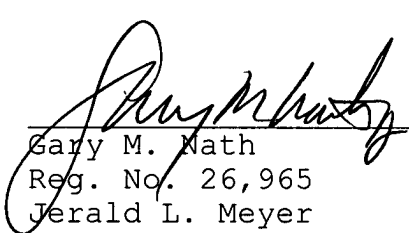
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December 16, 2002

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In re Application of:

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Serial No.: 09/908,802

Group Art Unit: 2832

Filed: July 12, 2001

Examiner: J. Waks

For: **METHOD OF AND APPARATUS FOR PRODUCING POWER FROM A
HEAT SOURCE**

ATTACHMENT A - MARKED-UP COPY OF CLAIM AMENDMENTS

Please cancel claims 3 and 7 without prejudice or disclaimer to the subject matter therein.

Please amend claims 1, 2, 4, 5, 6 and 8 as follows:

1. (Amended) A method for producing power from a heat source comprising the steps of:

a) heating [an intermediate fluid] a synthetic, alkylated aromatic heat transfer fluid with heat from said heat source and producing a vaporized [intermediate fluid] synthetic, alkylated aromatic heat transfer fluid in an intermediate fluid heater/vaporizer['];

b) vaporizing an organic liquid working fluid with heat from the vaporized [intermediate] synthetic, alkylated aromatic heat transfer fluid in an organic fluid vaporizer to form a vaporized organic working fluid and [intermediate] a synthetic, alkylated aromatic heat transfer fluid condensate;

c) expanding said vaporized organic working fluid in an organic vapor turbine for generating power and producing an expanded vaporized organic working fluid;

d) condensing said expanded organic vaporized working fluid to produce an organic fluid condensate; and

e) supplying the organic fluid condensate to the organic fluid vaporizer.

2. (Amended) A method according to claim 1 wherein prior to supplying said vaporized [intermediate] synthetic, alkylated aromatic heat transfer fluid to said organic fluid vaporizer said vaporized [intermediate] synthetic, alkylated aromatic heat transfer fluid is expanded in an intermediate fluid vapor turbine and power is produced.

4. (Amended) A method according to claim [3] 1 wherein said [intermediate] synthetic, alkylated aromatic heat transfer fluid condensate is supplied to said [intermediate] synthetic, alkylated aromatic heat transfer fluid heater/vaporizer.

5. (Amended) Apparatus for producing power from a heat source comprising:

a) [an intermediate] a synthetic, alkylated aromatic heat transfer fluid heater/vaporizer that heats and vaporizes the [intermediate] synthetic, alkylated aromatic heat transfer fluid with heat from said heat source and produces a vaporized [intermediate] synthetic, alkylated aromatic heat transfer fluid;

b) an organic fluid vaporizer that vaporizes an organic liquid working fluid with heat from the vaporized [intermediate] synthetic, alkylated aromatic heat transfer fluid to form a vaporized organic working fluid and [intermediate] a synthetic,

alkylated aromatic heat transfer fluid condensate;

c) an organic vapor turbine that expands said vaporized organic working fluid and generates power and produces expanded vaporized organic working fluid;

d) an organic fluid condenser that condenses said expanded organic vaporized working fluid to produce an organic working fluid condensate so that the organic working fluid condensate is supplied to the organic working fluid vaporizer.

6. (Amended) Apparatus according to claim 5 including an intermediate fluid vapor turbine that expands said vaporized [intermediate] synthetic, alkylated aromatic heat transfer fluid prior to supplying it to said organic fluid vaporizer such that said intermediate fluid vapor turbine produces power.

8. (Amended) Apparatus according to claim [7] 5 including a pump for supplying said [intermediate] synthetic, alkylated aromatic heat transfer fluid condensate to said intermediate fluid heater/vaporizer.